

<b>Notice of Allowability</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/700,271	PERRY, RUSSELL	
	Examiner	Art Unit	
	Sana Al-Hashemi	2164	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1.  This communication is responsive to 10/30/03.
2.  The allowed claim(s) is/are 1-38.
3.  Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a)  All
  - b)  Some\*
  - c)  None of the:
    1.  Certified copies of the priority documents have been received.
    2.  Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3.  Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

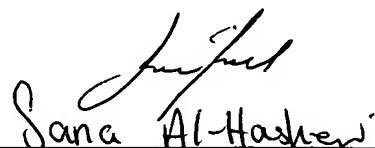
Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4.  A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5.  CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
  - (a)  including changes required by the Notice of Draftperson's Patent Drawing Review ( PTO-948) attached
    - 1)  hereto or 2)  to Paper No./Mail Date \_\_\_\_\_.
  - (b)  including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6.  DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1.  Notice of References Cited (PTO-892)
2.  Notice of Draftperson's Patent Drawing Review (PTO-948)
3.  Information Disclosure Statements (PTO-1449 or PTO/SB/08),  
Paper No./Mail Date 10/30/03
4.  Examiner's Comment Regarding Requirement for Deposit  
of Biological Material
5.  Notice of Informal Patent Application (PTO-152)
6.  Interview Summary (PTO-413),  
Paper No./Mail Date \_\_\_\_\_.
7.  Examiner's Amendment/Comment
8.  Examiner's Statement of Reasons for Allowance
9.  Other \_\_\_\_\_.



### **DETAILED ACTION**

1. Claims 1-7, 13-15, as renumbered 1-17 are allowed. Claims 8-12 are canceled.
2. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.
3. Authorization for this examiner's amendment was given in a telephone interview with Richard Berg on June 20, 2006.

### **EXAMINER'S AMENDMENT**

4. Please replace paragraphs [0009], [0148], [0149], [0155], [0156], [0167], [0168], [0199], and [0200] from the specification with the following:

[0009] Because the markup and content (text) are mixed, it is necessary to use some syntax to delimit the markup from the content. XML uses the characters '<' and '>' to separate a string of characters from the content. So the text "<root>" is a piece of markup language. The XML specification requires that the content and other markup following <root> is enclosed by an

end tag as follows </root>. The <root> is referred to as a start tag and the two tags, together with the enclosed content, is a node called ELEMENT. Somewhat more loosely the nodes <root> and </root> are called the start element and the end element.

[0144] FIG. 3 shows a Document Order List (DOL) 60, created by software 18a when software 18a parses the document 20 (the address list).

[0148] FIG. 4 shows a hash table 70, termed a YPath Table, which uses a node name sequence as a key into the hash table 72, comprising the sequence of node names that it is possible to traverse when parsing the document of FIG. 2 to reach any node in that document: node name location path sequences. These are listed in column 72 which comprises a node name sequence listing (location path sequences with sequence of node name encountered, but no ordinal values for the node names encountered). The place or places in the DOL 60 of address list 20 at which the entries in column 72 are true are listed in column 74 by listing the index number 62a at which the node name with that node name sequence can be found.

[0149] FIG. 2 to reach any node in that document: node name location path sequences. These are listed in column 72 which comprises a node name sequence listing (location path sequences with sequence of node name encountered, but no ordinal values for the node names encountered). The place or places in the DOL 20 at which the entries in column 72 are true are listed in column 74 by listing the index number 62a at which the node name with that node name sequence can be found.

[0155] In the YPath Table, at line 84, the location route, by node name sequence only, is in column 72 and the places in the DOL 60 where that route is true is listed in column 74.

[0156] Line 86 of the YPath Table shows the location path of the node name sequences encountered of addBook\address\surname, which appears in FIG. 2 four times with reference numbers 30a to 30d. These entries in the document 20 generate entries at index numbers 5, 17, 29 and 43 in the DOL 60, and so the YPath Table has associated with that particular node name sequence location path the index numbers corresponding to where it is true in the DOL (i.e. 5, 17, 29 and 43). Line 88 of the YPath Table shows the node name sequence addBook \address\surname\text and, in column 74, has associated with that node name sequence the index numbers 6, 18, 30 and 44 where that specific node name address sequence is true--i.e. the nodes that can be reached if that sequence is followed when parsing the document starting from the root node. It goes to specify the text node Smith, reference 32a, the text node Brown reference 32b, the text node Beckett reference 32c and the text node Beckett reference 32d.

[0167] Referring now to FIG. 5, there is also another hash table 110 created by the software 18a, termed a ZPath Table. The key to the hash table is the sequence of ordinals associated with node names of a location path to traverse the document to reach particular nodes, which sequence is associated with the index number in the DOL [[20]] 60 at which a path with the recited ordinal sequence is true.

[0168] For example, the first ordinal encountered, for nodes that are not children of other nodes, is that associated with the addBook entry in document 20, referenced by numeral 46 in FIG. 2.

[0199] From the YPath table (FIG. 4) it can be seen that the node name sequence addBook/address/street/text, line 92, has associated with it index numbers 8, 20, 32 and 46.

[0200] From the ZPath table it can be seen that the ordinal sequence query 1/3/1/1, line 138 [[if]] of FIG. 5, has associated with it index numbers 28, 30, 32, 34, 36, 38.

5. Please replace claims 9-12, 17-19, 26, 27, and 30 with the following:

9. (Currently Amended) A computer apparatus including a data structure stored in memory of the computing apparatus, the data structure being representative of a document and comprising a Document Order List (DOL), a Node Name Sequence List, and an Ordinal Sequence List; the DOL having a correlation of each node in the document with a unique index number; the Node Name Sequence List having a correlation of (i) each possible sequence of node names encountered in traversing the document from the root node to all nodes with (ii) the index numbers in the DOL associated with nodes for which each particular node name sequence is true; the Ordinal Sequence List having a correlation of (i) each node name ordinal sequence that it is possible to have in traversing the document from the root node to all nodes with (ii) the index numbers in the DOL associated with the nodes in the DOL for which each particular node

name ordinal sequence is true; the Node Name Sequence List and the Ordinal Sequence List providing indices accessing and providing queried data in said DOL to a user of said computing apparatus.

10. (Currently Amended) A computer apparatus including a data structure according to claim 9 which represents an XML document, or other document represented as a tree of connected nodes.

11. (Currently Amended) A computer apparatus including a data structure according to claim 9 wherein the DOL comprises an index number column associating unique index numbers with each node in the document; and at least one of: (i) a column associating node names with index numbers, for at least some nodes; (ii) a column associating node type with index numbers, for at least some nodes; (iii) node value with index numbers, for at least some nodes.

12. (Currently Amended) A computer apparatus including a data structure according to claim 11 having all three of (i), (ii) and (iii).

13. (Currently Amended) A computer apparatus including a data structure according to claim 11 wherein node types associative with a node include one, two or three of: element, attribute and text.

17. A method according to claim 15 comprising dividing the first and second index number sequences by splitting them into upper and lower ranges and pairing first and second upper and lower sources respectively, to create pairs of index number sequences ~~from the YPath and ZPath returns, and further dividing said pairs to create subsequent generation pairs of index numbers YPath and ZPath returns until a match is found between index numbers of said pairs, or subsequent generation pairs, of Ypath and ZPath the first and second index number sequences.~~

18. A method according to claim 15 comprising comparing both the lowest and highest index numbers in the ~~YPath return~~ first sequence of index numbers with both the highest and lowest index numbers of a ~~ZPath return~~ the second sequence of index numbers, and optionally also comparing the mid point index number in the ~~YPath return~~ the first sequence with the mid point index number in the second sequence ~~ZPath return~~.

19. A method according to claim 15 comprising comparing the lowest and/or highest index number of the one of (i) the ~~YPath return~~ first sequence of index numbers, or (ii) the ~~ZPath return~~ second sequence of index numbers, with a mid point index number from the other of (i) or (ii).

26. A method of making an XPath query comprising resolving the query into a YPath query and a ZPath query, and querying a Ypath Node Name Sequence Table with the YPath query and a ZPath Node Sequence Table with the ZPath query, where YPath is a node name sequence of an XPath sequence but with no ordinals, and where ZPath is an ordinal sequence for a node name sequence of an XPath query, but with no node names; and providing queried data based on said YPath query and ZPath query to a user of a computing apparatus.

27. A method of holding providing data to a user of a computer apparatus representative of a document stored in a computer readable memory of said computer apparatus, the method comprising storing in the memory a data structure representative of a document comprising a Document Order List, a YPath Table, and a ZPath Table; the Document Order List comprising a correlation between (i) each node in the document being represented and (ii) a unique index number; a YPath Table comprising a correlation between (i) each possible node name sequence traversable in the document to reach a node in the document and (ii) the index numbers for nodes

which are locatable using that node name sequence; a ZPath Table comprising a correlation between (i) each possible ordinal sequence for nodes traversed to reach a node in the document and (ii) the index numbers for the nodes which are locatable using that ordinal sequence; the YPath Table and the ZPath Table providing indices accessing and providing queried data in said Document Order List to a user of said computing apparatus.

36. A document parser according to claim [[36]] 34 wherein the correlator is adapted to list the nodes in the order they appear in the document.

*Allowable Subject Matter*

6. The following is an examiner's statement of reasons for allowance: the 37 CFR 1.131 was persuasive. Claims 1-38 are allowed.

Regarding independent claims 1, 9, 24, 26, 27, 31-34, the prior art of record fails to disclose or suggest the claimed provision of: dividing the query into two parts a XPath query into a YPath query and a ZPath query, and querying a Ypath Node Name Sequence Table with the YPath query and a ZPath Node Sequence Table with the ZPath query, where YPath is a node name sequence of an XPath sequence but with no ordinals, and where ZPath is an ordinal sequence for a node name sequence of an XPath query, but with no node names; and providing queried data based on said YPath query and ZPath query to a user of a computing apparatus, in conjunction with remaining claim provisions, is not taught or suggested, or rendered obvious over the prior art of record or that encountered in searching the invention.

7. The dependent claims 2-8, 10-23, 25, 28-30, 32-33, and 35-38, being further limiting to the independent claims, definite and enabled by the Specification are also allowed.

### **Comments**

**The date on which the petition under 37 CFR 1.136(a) and the appropriate extension fee have been filed is the date for purposes of determining the period of extension and the corresponding amount of the fee. In no case may an applicant reply outside the SIX (6) MONTH statutory period or obtain an extension for more than FIVE (5) MONTHS beyond the date for reply set forth in an Office action. A fully responsive reply must be timely filed to avoid abandonment of this application.**

**Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."**

8. As allowable subject matter has been indicated, Applicant's response must either comply with all formal requirements or specifically traverse each requirement not complied with. See 37 CRF 1.111(b) and MPEP section 707.07(a).

9. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

***Points of Contact***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sana Al-Hashemi whose telephone number is (571) 272-4013. The examiner can normally be reached on 8Am-4:30Pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Charles Rones can be reached on (571) 272-4085. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Sana Al-Hashemi  
Patent Examiner  
Technology Center 2100  
June 21, 2006